RESEARCH PAPER

A Case Report of Bilateral Isolated Tubal Endometriosis

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ABSTRACT
Endometriosis, defined by the presence of ectopic endometrial glands and stroma, is a prevalent gynecological disorder. While ovarian and peritoneal localizations are common, isolated involvement of the fallopian tubes without concomitant pelvic disease is a rare entity, particularly when bilateral. This case report describes a 37-year-old parous woman who presented with worsening cyclical pelvic pain. Preoperative imaging, including ultrasound and magnetic resonance imaging (MRI), revealed bilateral tubular cystic lesions with hemorrhagic content, suggestive of hematosalpinx secondary to tubal endometriosis. The patient underwent exploratory laparotomy with bilateral salpingectomy. Histopathological examination of the excised tubes confirmed the diagnosis of bilateral isolated tubal endometriosis, with no evidence of ovarian or peritoneal involvement. The patient's postoperative recovery was uneventful, and she was discharged with a plan for adjuvant medical therapy with a GnRH analogue. This case underscores the diagnostic challenge posed by this condition, highlights the pivotal role of histopathology in confirming the diagnosis, and contributes to the limited literature on this uncommon presentation of endometriosis...

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INTRODUCTION

Endometriosis is a chronic, estrogen-dependent condition affecting approximately 10–15% of women of reproductive age (1). It is characterized by the growth of endometrial-like tissue outside the uterine cavity, most frequently implanting on the ovaries, pelvic peritoneum, and uterosacral ligaments (2). Clinical manifestations vary widely but often include dysmenorrhea, chronic pelvic pain, dyspareunia, and infertility.

Involvement of the fallopian tubes is typically observed as a component of widespread pelvic endometriosis. Isolated tubal endometriosis, where the ectopic tissue is confined solely to one or both fallopian tubes without ovarian or peritoneal lesions, is considerably less common (3). Bilateral isolated tubal endometriosis represents an exceptionally rare presentation, often diagnosed incidentally during surgery for other indications or, as in the present case, during investigation for pelvic pain (4). The preoperative diagnosis is challenging due to nonspecific symptoms and imaging findings that can mimic other tubal pathologies such as chronic salpingitis, hydrosalpinx, or even neoplastic processes (5). This case report details the clinical presentation, diagnostic workup, management, and histopathological findings of a patient with bilateral isolated tubal endometriosis, emphasizing its diagnostic subtleties and clinical significance.

CASE PRESENTATION

A 37-year-old female, gravida 1, para 1, living 1, with no history of sterilization, presented to the gynecology outpatient department with a chief complaint of chronic pelvic pain. The pain was cyclical, occurring during menstrual periods, and had progressively intensified over the preceding three cycles. The patient reported regular menstrual cycles with normal flow, but the pain was now severe and bilateral, localized to the flanks. She had a history of taking elagolix (150 mg daily) for three cycles prior to presentation for similar symptoms, without significant relief. Her obstetric history was significant for one full-term normal vaginal delivery. There was no significant family history.

General and systemic examinations were unremarkable. Per abdominal examination revealed a soft, non-tender abdomen. Speculum examination showed a healthy cervix and vagina. On bimanual pelvic examination, the uterus was of normal size, anteverted, and non-tender. Left forniceal fullness was appreciated, while the right fornix was free.

Routine hematological and biochemical investigations were within normal limits. A Papanicolaou smear was negative for intraepithelial lesion or malignancy. Investigations to rule out genital tuberculosis were also negative.

Transvaginal ultrasonography revealed a normal-sized uterus (68.7 x 42.8 x 46.1 mm) with an endometrial thickness of 7.3 mm. The right ovary measured 25.0 x 19.2 mm. A tubular cystic lesion measuring approximately 44.1 x 30.1 mm, containing fine internal echoes and thin

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septations, was noted adjacent to it. The left ovary measured 38.7 x 26.3 mm and contained a hemorrhagic cyst (32.8 x 22.7 mm). A separate left-sided tubular cystic lesion measuring 27 x 20.5 mm with similar internal characteristics was also identified. The sonographic impression was bilateral tubal endometriosis with a left ovarian hemorrhagic cyst.

Subsequent MRI of the pelvis confirmed these findings. It demonstrated bilateral adnexal tubular cystic lesions (left: 61 x 47 x 51 mm; right: 51 x 43 x 53 mm) showing hyperintense signal on T1-weighted images, consistent with hemorrhagic content. These lesions were noted to meet in the midline, highly suggestive of bilateral hematosalpinx, likely secondary to tubal endometriosis. The ovaries were not distinctly visualized, possibly compressed by the tubal masses. The uterus appeared normal with a 4 mm endometrial lining, and a minimal amount of free pelvic fluid was noted.

Given the symptomatic presentation and imaging findings, the patient was scheduled for surgical exploration. An exploratory laparotomy via a midline vertical incision was performed. Intraoperative findings confirmed bilateral, markedly dilated fallopian tubes filled with dark, altered blood, consistent with hematosalpinx. The tubes were densely adhered to each other in the midline. Notably, both ovaries appeared normal, and there were no visible endometrial implants on the pelvic peritoneum, uterosacral ligaments, or elsewhere in the abdominal cavity. A bilateral salpingectomy was performed. The patient tolerated the procedure well.

Histopathological examination of the resected fallopian tubes revealed a thickened muscular wall. Multiple foci of endometrial glands surrounded by endometrial stroma were identified within the tubal wall, along with evidence of recent and old hemorrhage, including hemosiderin-laden macrophages. These findings were diagnostic of tubal endometriosis. (Figure 1)

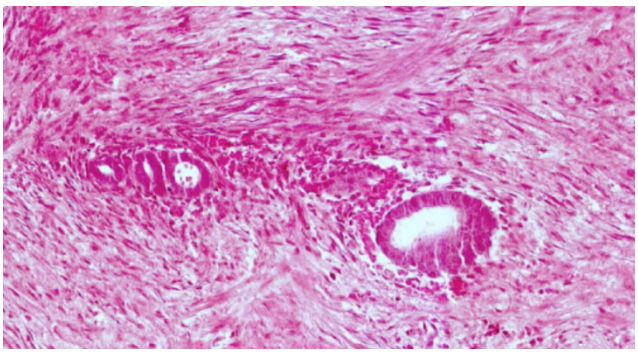

Figure 1: Histological appearance of tubal endometriosis observed after laparotomy (hematoxylin–eosin staining; original magnification ×200)

The patient had an uncomplicated postoperative recovery and was discharged in stable condition. Following discussion of the histopathology report, adjuvant medical therapy with a gonadotropin-releasing hormone (GnRH) analogue for three months was advised to suppress any potential microscopic residual disease and manage symptoms.

DISCUSSION

This case illustrates a rare presentation of endometriosis confined exclusively to both fallopian tubes. While endometriosis is a common disease, isolated tubal involvement accounts for a small fraction of cases, with bilateral isolated disease being particularly uncommon (3, 6). The pathogenesis of endometriosis, including its tubal variant, remains debated. Sampson's theory of retrograde menstruation is widely accepted for pelvic disease (7). However, isolated tubal involvement, especially when bilateral and without peritoneal seeding, may be better explained by alternative mechanisms such as coelomic metaplasia of the tubal serosal mesothelium or the activation of embryonic Mullerian rests within the tubal musculature (8). Lymphatic or hematogenous spread is another proposed theory, though less commonly invoked for pelvic disease (9).

Clinically, tubal endometriosis can be asymptomatic or present with a spectrum of symptoms including dysmenorrhea, chronic pelvic pain, dyspareunia, and infertility (10). In this case, the predominant symptom was progressive, cyclical pelvic pain, likely due to distension of the tubal wall by periodic hemorrhage, leading to hematosalpinx. Tubal endometriosis is a recognized risk factor for ectopic pregnancy, as the inflammatory and fibrotic reaction can disrupt normal tubal architecture and motility (11). Although our patient was parous and not seeking fertility at presentation, bilateral disease could have significant implications for fertility due to potential bilateral tubal damage.

Preoperative diagnosis is challenging. Ultrasound findings of a cystic, tubular adnexal structure with low-level internal echoes are suggestive but not pathognomonic for hematosalpinx (12). MRI offers superior soft-tissue characterization; T1-weighted hyperintensity and "shading" on T2-weighted images within a dilated tube are highly indicative of endometriotic content (13). However, as seen here, imaging can suggest the diagnosis but cannot definitively rule out other pathologies like chronic pyosalpinx or tubal carcinoma. Therefore, histopathological confirmation remains the gold standard (5). The microscopic identification of two key components, endometrial glands and stroma within the tubal wall is diagnostic, often accompanied by hemosiderophages as evidence of previous hemorrhage (6).

The management of isolated tubal endometriosis depends on the patient's symptoms, age, and reproductive desires. In patients who have completed childbearing, salpingectomy is both diagnostic and therapeutic, as it removes the source of pain and eliminates the risk of future tubal pathology, including the rare possibility of malignant transformation (14). For women desiring future fertility, a more conservative surgical approach, such as salpingotomy or focal excision of the endometriotic nodule, may be considered, albeit with a risk of recurrence and potential compromise to tubal function (15).

This case reinforces several key points. First, isolated bilateral tubal endometriosis should be included in the differential diagnosis of bilateral cystic adnexal masses, particularly in women with cyclical pain. Second, it highlights the indispensable role of histopathological examination of all surgically removed tissue, as gross inspection alone may not reveal the nature of the disease. Finally, it adds to the limited body of literature on this rare entity, improving awareness among clinicians and pathologists.

CONCLUSION

Bilateral isolated tubal endometriosis is an uncommon and diagnostically challenging variant of a common gynecological disease. This case report of a 37-year-old woman highlights its typical presentation with progressive cyclical pain and its characteristic, though non-specific, imaging findings of bilateral hematosalpinx. Definitive diagnosis was achieved only through histopathological examination following salpingectomy. The case underscores the importance of a high index of clinical suspicion, the utility of multimodal imaging, and the critical role of histopathology in guiding diagnosis and management. Increased awareness of this rare presentation can lead to more accurate preoperative assessment, appropriate surgical planning, and improved patient counseling, particularly concerning fertility implications and long-term management..

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